Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister Youth Skills Development Program

"Skills for All"

Course Contents / Lesson Plan
Course Title: React Native
Duration: 1 Months

Trainer Name	
Author Name	
Course Title	**React Native**
Objectives and Expectations	**Employable skills and hands-on practice in React Native** **Objective:** **Comprehensive Understanding of React Native:** **Objective:** Develop a thorough understanding of React Native, including its architecture, components, and the principles of cross-platform mobile app development. **Effective Development Environment Setup:** **Objective:** Enable students to set up a productive development environment with Node.js, npm, and React Native CLI, fostering independence in project initiation. **Proficiency in React Components and JSX:** **Objective:** Ensure students can create functional and class components, apply JSX syntax, and render components effectively in a React Native environment. **Styling and Layout Design Mastery:** **Objective:** Instruct students on styling using Flexbox, introduce UI components, and guide them in implementing responsive and visually appealing layouts. **Navigation Implementation Proficiency:** **Objective:** Teach effective navigation between screens using React Navigation, including passing parameters and customizing navigation options. **Data Rendering, Mapping, and Reusability Mastery:** **Objective:** Instruct students on rendering dynamic data efficiently, using Array.map() for lists, and creating reusable components for data rendering. **Advanced Styling Techniques and Animation Skills:** **Objective:** Explore advanced styling using StyleSheet, external libraries like Styled Components, and guide students in implementing animations using the Animated API. **Integration of Advanced UI Components and Native Modules:** **Objective:** Provide insights into advanced UI components,

	libraries, and integration of native modules for platform-specific functionality. **Testing, Debugging, and Performance Optimization Proficiency:** **Objective:** Instruct students on debugging tools, testing on various devices, and implementing performance optimizations for efficient app development. **Expectations:** **Independence in Project Setup:** **Expectation:** Students should independently set up their development environment and create new React Native projects. **Effective Component Creation and Rendering:** **Expectation:** Students should confidently create, style, and render React components using JSX syntax. **Successful Asynchronous Programming:** **Expectation:** Students should proficiently handle asynchronous operations, make API requests, and manage data retrieval and storage. **Integration of Advanced UI Components and Native Modules:** **Expectation:** Students should be capable of integrating advanced UI components, leveraging external libraries, and incorporating native modules for platform-specific functionality. **Effective Testing, Debugging, and Optimization:** **Expectation:** Students should be skilled in using debugging tools, testing on various devices, and implementing optimizations for efficient app performance. **Successful App Deployment and Collaborative Project Work:** **Expectation:** Students should successfully deploy a React Native app, actively contribute to guided project development, and collaborate effectively within a development team. **Employable Skills: Hands-on Practice:** • **Mobile App Development Proficiency:** Ability to develop cross-platform mobile applications using React Native, making graduates valuable contributors to mobile development teams. **UI/UX Design Skills:** Proficiency in styling, layout design, and implementation of responsive designs, ensuring a positive and visually appealing user experience.

	State Management Expertise: Capability to manage component and global state efficiently, facilitating the development of dynamic and interactive applications. **API Integration Knowledge:** Experience in making asynchronous API requests, handling data fetching, and managing external data sources in real-world applications. **Navigation and Routing Proficiency:** In implementing navigation between screens, passing parameters, andcustomizing navigation behavior, crucial for creating seamless user journeys. **Debugging and Optimization Skills:** Ability to identify and resolve issues using debugging tools, along with knowledge of performance optimization techniques for efficient app development. **Collaborative Development Experience:** Exposure to collaborative project development, contributing to the entire development lifecycle from setup to deployment.
Entry-level of trainees	For an advanced course of React Native proposed entry level is minimum bachelors in relevant subject, so expectations from the trainees are: • Basic understanding of programming concepts. • Familiarity with computer systems and operating systems. • No prior knowledge of React Native is required
Learning Outcomes of the course	**The content of this lesson plan is adopted from the internationally recognized ISTQB certification course, "Certified Tester Foundation Level (CTFL)," ensuring alignment with global standards and practices.** **For further reference, the link to the source material is provided below:** **Understanding of React Native Fundamentals:** Gain a solid understanding of React Native, including its architecture, components, and principles of cross-platform mobile app development. **Effective Development Environment Setup:** Independently set up a development environment with Node.js, npm, and the React Native CLI for initiating and managing React Native projects. **Proficiency in React Components and JSX:**

	Master the creation of functional and class components, apply JSX syntax, and effectively render components within a React Native environment. **Styling and Layout Design Skills:** Develop skills in styling using Flexbox layout, implementing basic UI components, and creating responsive and visually appealing layouts. **Data Rendering, Mapping, and Reusability Mastery:** Demonstrate mastery in rendering dynamic data efficiently, employing the Array.map() method, and creating reusable components for data rendering. **Advanced Styling Techniques and Animation Skills:** Develop advanced styling skills using StyleSheet, external libraries like Styled Components, and animation implementation using the Animated API. platform-specific functionalities. **Testing, Debugging, and Performance Optimization Proficiency:** Acquire proficiency in testing React Native apps, using debugging tools effectively, and implementing optimizations for enhanced app performance. **App Deployment and Collaborative Project Work:** Successfully deploy a React Native app, actively contribute to guided project development, and collaborate effectively within a development team.
Course Execution Plan	The total duration of the course: **1 months (4 Weeks)** Class hours: **4 hours per day** Theory: **20%** Practical: **80%** Weekly hours: **20 hours per week** Total contact hours: **80 hours**
Companies offering jobs in the respective trade	• Trillium • Afinity • Net Sole • I2c • Multinet • Nescom • Transworld • Netcom • Systems • Web Work Solution • Purelogics • Nets-International • Ebryx

Job Opportunities	• Mobile App Development • Android Developer • Enterprise Mobile Solutions • Mobile Backend Engineer • Game Development • Emerging Technologies • Database Administrator • System Analyst
No of Students	25
Learning Place	Classroom / Lab
Instructional Resources	**Online Courses and Tutorials:** 1. Meta React Native Specialization https://www.coursera.org/specializations/meta-react-native 2. Free online course React Native Tutorial for Beginners Build a React Native App: https://www.youtube.com/watch?v=0-S5a0eXPoc • **Books and References:** React Native Notes for Professionals book https://books.goalkicker.com/ReactNativeBook/ Official React Native Documentation: https://reactnative.dev/docs/getting-started • **Practice and Experimentation:** https://codesandbox.io/p/sandbox/react-native-practice-4klyx?file=%2Fsrc%2Findex.js

MODULES

Scheduled Weeks	Module Title	Days	Hours	Learning Units	Home Assignment
Week 1	**Introduction to React Native and Setup**	**Day 1**	**Hour 1 to 4**	• **Introduction to React Native** • **Overview of React Native framework** • **Advantages of using React Native for mobile app development** • **Introduction to cross-platform development**	
		Day 2	**Hour 1 to 4**	• **Setup and Installation** • Installation and setup of development environment	

				(Node.js, npm, React Native CLI) • Creating a new React Native project • Exploring the basic project structure	
		Day 3	**Hour 1 to 4**	• **React Components and JSX** • Understanding React components and JSX syntax • Creating functional and class components • Rendering components in React Native	
		Day 4	**Hour 1 to 4**	• **Styling in React Native** • Styling components using Flexbox layout • Using basic UI components like Text, View, Image, and Button • Implementing basic layout designs	
		Day 5	**Hour 1 to 4**	• **Navigation in React Native** • Implementing basic navigation between screens using React Navigation • Passing parameters between screens • Exploring	

				navigation options and customization	
Week 2	**State Management and Data Handling**	**Day 1**	**Hour 1 to 4**	• **Managing Component State** • Managing component state with useState hook • Understanding the difference between state and props • Handling user input and updating state	
		Day 2	**Hour 1 to 4**	**Context API and Global State** Introduction to Context API for managing global state Implementing global state management using Context Sharing data between components using Context	
		Day 3	**Hour 1 to 4**	• **Asynchronous Programming** • Introduction to asynchronous programming in JavaScript • Working with Promises and async/await for handling asynchronous operations • Making asynchronous API requests	

		Day 4	**Hour 1 to 4**	• **Data Fetching with Fetch API** • Making HTTP requests to fetch data from external APIs • Handling fetch errors and implementing loading indicators • Storing fetched data in component state or global state	
		Day 5	**Hour 1 to 4**	• **Data Rendering and Mapping** • Rendering dynamic data in React Native components • Using Array.map() method to render lists of data • Creating custom components for data rendering	
Week 3	**Advanced Topics and UI Design**	**Day 1**	**Hour 1 to 4**	• **Advanced Styling Techniques** • Advanced styling techniques using StyleSheet • Using external styling libraries like Styled Components • Implementing responsive designs for various screen sizes	
		Day	**Hour 1 to**	• **Animations in**	

		2	**4**	**React Native** • Introduction to animations in React Native • Using Animated API to create animations • Implementing gesture-based animations	
		Day 3	**Hour 1 to 4**	• **Handling User Input** • Implementing form inputs and validations • Working with different input types (text input, dropdowns, checkboxes) • Handling user interactions and gestures	
		Day 4	**Hour 1 & 2**	• **Advanced UI Components** • Exploring advanced UI components and libraries • Implementing complex layouts and designs • Customizing UI components for specific use cases	
		Day 5	**Hour 1 & 2**	• **Integrating Native Modules** • Integrating native modules and libraries into React Native projects • Using Native Modules and	

				Native UI Components for platform-specific functionality • Understanding the bridge between JavaScript and native code	
Week 4	**Deployment and Project Development**	**Day 1**	**Hour 1 to 4**	• **Testing and Debugging** • Introduction to debugging tools in React Native • Testing React Native apps on different devices and simulators • Handling common debugging issues and errors	
		Day 2	**Hour 1 to 4**	• **Performance Optimization** • Identifying performance bottlenecks in React Native apps • Implementing optimizations for improved performance • Memory management and reducing app size	
		Day 3	**Hour 1 to 4**	• **App Deployment** • Building and packaging React Native apps for Android and iOS platforms • Deploying apps to Google Play	

				Store and Apple App Store • Managing app versions and updates	
		Day 4	**Hour 1 to 4**	• **Project Development (Part 1)** • Working on a guided project to apply learned concepts • Developing a simple React Native app from scratch • Implementing features such as navigation, data fetching, and state management	
		Day 5	**Hour 1 to 4**	• **Project Development (Part 2)** • Continuation of the guided project development • Adding advanced features and functionalities to the app • Testing, debugging, and deploying the completed project	

Practical Tasks:

	Task	Description	Week
1	**Develop a Simple To-Do List App using React Native**	● Develop a basic to-do list application using React Native ● Allow users to add tasks, mark them as completed, and delete tasks ● Implement basic navigation between screens to handle the task list and task details.	Week 1
2	**Develop a Weather Forecast App using React Native**	● Build a weather forecast application using React Native ● Fetch weather data from a weather API, display the current weather, and provide a 5-day forecast ● Implement state management to handle loading indicators, error messages, and global state for the selected city.	Week 2
3	**Develop a Recipe Finder App with Advanced UI and Animations using React Native**	● Create a Recipe Finder application using React Native ● Allow users to search	Week 3

		for recipes, view recipe details, and save their favorite recipes ● Implement advanced styling techniques, animations, and native module integration to enhance the user experience.	
4	**Develop and Deploy a Task Management App using React Native**	● Develop a task management application using React Native ● Allow users to create, update, delete tasks, set deadlines, and prioritize tasks ● Focus on testing, performance optimization, and deployment of the app.	Week 4
5	**Project Documentation:**	● Create comprehensive documentation for the E-Commerce App. ● Include a project overview, installation instructions, and a guide on how to use and navigate the app.	Final Term
6	**Final Project Enhancement:**	● Enhance the E-Commerce App with additional features. ● Consider features like user authentication, product categories, and the ability to place	Final Term

		orders.	

Annexure-IV:

Workplace/Institute Ethics Guide

Work ethic is a standard of conduct and values for job performance. The modern definition of what constitutes good work ethics often varies. Different businesses have different expectations. Work ethic is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue, or value to strengthen character and individual abilities. It is a set of values-centered on the importance of work and manifested by determination or desire to work hard.

The following ten work ethics are defined as essential for student success:

1. **Attendance:**
   Be at work every day possible, plan your absences don't abuse leave time. Be punctual every day.
2. **Character:**
   Honesty is the single most important factor having a direct bearing on the final success of an individual, corporation, or product. Complete assigned tasks correctly and promptly. Look to improve your skills.
3. **Team Work:**
   The ability to get along with others including those you don't necessarily like. The ability to carry your weight and help others who are struggling. Recognize when to speak up with an idea and when to compromise by blend ideas together.
4. **Appearance:**
   Dress for success set your best foot forward, personal hygiene, good manner, remember that the first impression of who you are can last a lifetime
5. **Attitude:**
   Listen to suggestions and be positive, accept responsibility. If you make a mistake, admit it. Values workplace safety rules and precautions for personal

and co-worker safety. Avoids unnecessary risks. Willing to learn new processes, systems, and procedures in light of changing responsibilities.

6. **Productivity:**

   Do the work correctly, quality and timelines are prized. Get along with fellows, cooperation is the key to productivity. Help out whenever asked, do extra without being asked. Take pride in your work, do things the best you know-how. Eagerly focuses energy on accomplishing tasks, also referred to as demonstrating ownership. Takes pride in work.

7. **Organizational Skills:**

   Make an effort to improve, learn ways to better yourself. Time management; utilize time and resources to get the most out of both. Take an appropriate approach to social interactions at work. Maintains focus on work responsibilities.

8. **Communication:**

   Written communication, being able to correctly write reports and memos. Verbal communications, being able to communicate one on one or to a group.

9. **Cooperation:**

   Follow institute rules and regulations, learn and follow expectations. Get along with fellows, cooperation is the key to productivity. Able to welcome and adapt to changing work situations and the application of new or different skills.

10. **Respect:**

    Work hard, work to the best of your ability. Carry out orders, do what’s asked the first time. Show respect, accept, and acknowledge an individual’s talents and knowledge. Respects diversity in the workplace, including showing due respect for different perspectives, opinions, and suggestions.